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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,961	10/24/2003	Hwan-Chia Chang	5357	6980
26936	7590	04/13/2005		
SHOEMAKER AND MATTARE, LTD 10 POST OFFICE ROAD - SUITE 110 SILVER SPRING, MD 20910			EXAMINER STONER, KILEY SHAWN	
			ART UNIT	PAPER NUMBER
			1725	
DATE MAILED: 04/13/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/691,961

Applicant(s)

CHANG, HWAN-CHIA

Examiner

Kiley Stoner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 8-9, 13, 15, 17-18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Aoki et al. (JP-363287092A). Aoki et al. teaches a method for testing soldering quality, comprising the steps of: mounting at least one lead having a first color on a printed circuit board (PCB); and soldering the lead to the PCB and changing the first color of the lead to a second color so as to produce a color difference for determining the soldering quality (abstract and Figures); the lead is incorporated with an electronic component (abstract and Figures); the electronic component is selected from the group consisting of active device, passive device, semiconductor package, and printed circuit board (abstract and Figures); melted solder or solder flux is applied on the PCB and covers the lead to show the second color (abstract and Figures); a coloring reagent is added to the melted solder or solder flux (abstract and Figures); connecting at least one connector between two electronic components by projecting leads having a first color of the connector; and soldering the leads of the connector to one of the electronic components and changing the first color of the leads to a second color so as to produce a color difference for determining the soldering quality (abstract and

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Figures); the leads are coated with at least one colored layer to show the first color (abstract and Figures); melted solder or solder flux is applied on the PCB and covers the leads to show the second color (abstract and Figures); a coloring reagent is added to the melted solder or solder flux (abstract and Figures); the electronic component is selected from the group consisting of active device, passive device, semiconductor package, and printed circuit board (abstract and Figures).

Claims 1-3, 6-13 and 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohta et al. (5,650,020). Ohta et al. teaches a method for testing soldering quality, comprising the steps of: mounting at least one lead having a first color on a printed circuit board (PCB); and soldering the lead to the PCB and changing the first color of the lead to a second color so as to produce a color difference for determining the soldering quality (abstract; column 1, lines 13-21); the lead is incorporated with an electronic component (abstract; column 1, lines 13-21); the electronic component is selected from the group consisting of active device, passive device, semiconductor package, and printed circuit board (abstract; column 1, lines 13-21); the lead is coated with at least one colored layer to show the first color (column 2, lines 1-30); the colored layer is made of a chemical dye (column 2, lines 1-30); melted solder or solder flux is applied on the PCB and covers the lead to show the second color (column 2, lines 1-30); a coloring reagent is added to the melted solder or solder flux (column 2, lines 1-30); the first color is selected from the group of colors consisting of black, dark black, red, yellow, blue, green, orange, and purple (column 2, lines 1-30);

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the second color is silver or purplish red (column 3, lines 55-56); the second color is observed with visual inspection, or visualized by irradiation of a specific light source (column 2, lines 31-44); connecting at least one connector between two electronic components by projecting leads having a first color of the connector; and soldering the leads of the connector to one of the electronic components and changing the first color of the leads to a second color so as to produce a color difference for determining the soldering quality (abstract; column 1, lines 13-21); the leads are coated with at least one colored layer to show the first color (column 2, lines 1-30); the colored layer is made of a chemical dye (column 2, lines 1-30); melted solder or solder flux is applied on the PCB and covers the leads to show the second color (column 2, lines 1-30); a coloring reagent is added to the melted solder or solder flux (column 2, lines 1-30); the first color is selected from the group of colors consisting of black, dark black, red, yellow, blue, green, orange, and purple (column 2, lines 1-30); the electronic component is selected from the group consisting of active device, passive device, semiconductor package, and printed circuit board (column 1, lines 13-21).

Claims 1-3, 13 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoue et al. (5,699,612). Inoue et al. teaches a method for testing soldering quality, comprising the steps of: mounting at least one lead having a first color on a printed circuit board (PCB); and soldering the lead to the PCB and changing the first color of the lead to a second color so as to produce a color difference for determining the soldering quality (column 1, lines 10-51; column 5, lines 14-18 and column 5, lines 51-

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58); the lead is incorporated with an electronic component (column 1, lines 10-51); the electronic component is selected from the group consisting of active device, passive device, semiconductor package, and printed circuit board (column 1, lines 10-51); connecting at least one connector between two electronic components by projecting leads having a first color of the connector; and soldering the leads of the connector to one of the electronic components and changing the first color of the leads to a second color so as to produce a color difference for determining the soldering quality (column 1, lines 10-51; column 5, lines 14-18 and column 5, lines 51-58); the electronic component is selected from the group consisting of active device, passive device, semiconductor package, and printed circuit board (column 1, lines 10-51).

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 6-10, 12-13 and 15-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Qi et al. (6,650,022 B1). Qi et al. teaches a method for testing soldering quality, comprising the steps of: mounting at least one lead having a first color on a printed circuit board (PCB); and soldering the lead to the PCB and changing the first color of the lead to a second color so as to produce a color difference for determining the soldering quality (column 1, lines 21-26; column 2, lines 34-46; and column 3, line 34-column 4, line 12); the lead is incorporated with an electronic component (Figures); the electronic component is selected from the group consisting of active device, passive

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device, semiconductor package, and printed circuit board (column 1, lines 21-26); the lead is coated with at least one colored layer to show the first color (column 4, lines 7-13); the colored layer is made of a chemical dye (column 4, lines 7-13); melted solder or solder flux is applied on the PCB and covers the lead to show the second color (column 4, lines 7-13); a coloring reagent is added to the melted solder or solder flux (column 4, lines 7-13); the first color is selected from the group of colors consisting of black, dark black, red, yellow, blue, green, orange, and purple (column 4, lines 7-13); the second color is observed with visual inspection, or visualized by irradiation of a specific light source (column 4, lines 7-13); at least one connector between two electronic components by projecting leads having a first color of the connector; and soldering the leads of the connector to one of the electronic components and changing the first color of the leads to a second color so as to produce a color difference for determining the soldering quality (column 1, lines 21-26; column 2, lines 34-46; and column 3, line 34-column 4, line 12); the leads are coated with at least one colored layer to show the first color (column 4, lines 7-13); the colored layer is made of a chemical dye (column 4, lines 7-13); melted solder or solder flux is applied on the PCB and covers the leads to show the second color (column 4, lines 7-13); a coloring reagent is added to the melted solder or solder flux (column 4, lines 7-13); the first color is selected from the group of colors consisting of black, dark black, red, yellow, blue, green, orange, and purple (column 4, lines 7-13); and the electronic component is selected from the group consisting of active device, passive device, semiconductor package, and printed circuit board (column 1, lines 21-26).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki et al. (JP-363287092A); Ohta et al. (5,650,020) or Qi et al. (6,650,022 B1) in view of Crotzer et al. (5,977,489). Aoki et al., Ohta et al. or Qi et al. teach all of the limitations of the claims except the lead is formed with a soldering portion by a plasma deposition, physical deposition, or chemical deposition technique to be soldered to the PCB.

Crotzer et al. teaches the lead is formed with a soldering portion by a plasma deposition, physical deposition, or chemical deposition technique to be soldered to the PCB (column 3, lines 13-23). At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the lead forming method of Crotzer et al. with the method of Aoki et al., Ohta et al. or Qi et al. in order to form the leads of the desired shape and size.

Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (5,699,612) in view of Sarkhel et al. (US-2001/0002982). Inoue et al. teaches that the leads are coated with solder cream, but fails to specify the composition. Sarkhel et al. teaches coating a lead with at least one metallic material selected from



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the group consisting of nickel, nickel alloy, copper, copper alloy, silver, silver alloy, bismuth, bismuth alloy, rhodium, rhodium alloy, ruthenium, ruthenium alloy, zirconium, zirconium alloy, chromium, chromium alloy, titanium, and titanium alloy, to show the first color (paragraph [0020]). At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the specific solder paste of Sarkhel et al. with the method of Inoue et al. in order to form a solder joint at a desired temperature level.

### ***Conclusion***

The prior art of record that is cited as of interest is presented on the form-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiley Stoner whose telephone number is (571) 272-1183. The examiner can normally be reached on Monday-Thursday (7:30 a.m. to 6:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on Monday-Friday at (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**KILEY S. STONER**  
**PRIMARY EXAMINER**

*Kiley Stoner* 4/11/05